

We claim:

1. An oligoribonucleotide of from 21 to 30 nucleotides comprising:
a contiguous sequence of SEQ ID NO:1 or a sequence which has one-base mismatch with SEQ ID NO:1,
5 wherein the ribose residue of at least one nucleotide is protected at the 2'-O-position by 2, 4-dinitrophenyl (DNP) and wherein the oligoribonucleotide is capable of down-regulating the expression of the RI α subunit of protein kinase A.
2. The oligoribonucleotide of claim 1 wherein the oligoribonucleotide has from 21 to
10 25 nucleotides.
3. The oligoribonucleotide of claim 2, wherein the oligoribonucleotide has from 21-23 nucleotides.
- 15 4. The oligoribonucleotide of claim 3, wherein the oligoribonucleotide is selected from the group consisting of SEQ ID NO:1, SEQ ID NO:10, SEQ ID NO:13, SEQ ID NO:14, SEQ ID NO:15, SEQ ID NO:16, SEQ ID NO:17, SEQ ID NO:18, SEQ ID NO:19 and SEQ ID NO:22.
- 20 5. The oligoribonucleotide of claim 4, wherein the oligoribonucleotide is SEQ ID NO:1.
6. The oligoribonucleotide of claim 1, wherein the one-base mismatch is selected from the group consisting of SEQ ID NO:10, SEQ ID NO:13, SEQ ID NO:14, SEQ ID
25 NO:15, SEQ ID NO:16, SEQ ID NO:17, SEQ ID NO:18 and SEQ ID NO:19.
7. The oligoribonucleotide of claim 1, wherein the DNP to nucleotide molar ratio is between 0.5 to 0.8
- 30 8. The oligoribonucleotide of claim 7, wherein the DNP to nucleotide molar ratio is between 0.65 to 0.75.
9. A composition comprising the oligoribonucleotide of claim 1.

10. The composition of claim 9, further comprising a complementary strand to the oligoribonucleotide.
- 5 11. The composition of claim 9 further comprising a pharmaceutically acceptable carrier.
- 12 The composition of claim 11, further comprising a chemotherapeutic agent.
- 10 13. The composition of claim 9, wherein the oligoribonucleotide has a sequence selected from the group consisting of SEQ ID NO:1, SEQ ID NO:10, SEQ ID NO:13, SEQ ID NO:14, SEQ ID NO:15, SEQ ID NO:16, SEQ ID NO:17, SEQ ID NO:18, SEQ ID NO:19, SEQ ID NO:22 and combinations thereof.
- 15 14. The composition of claim 13, wherein the oligoribonucleotide has the sequence of SEQ ID NO:1.
15. A method of down regulating the expression of RI_{α} /PKA gene in a cell comprising providing to the cell the oligoribonucleotide of claim 1 in an amount effective to down-
- 20 regulate the expression of the RI_{α} /PKA gene.
16. The method of claim 15, wherein the sequence of the oligoribonucleotide is selected from the group consisting of SEQ ID NO:1, SEQ ID NO:10, SEQ ID NO:13, SEQ ID NO:14, SEQ ID NO:15, SEQ ID NO:16, SEQ ID NO:17, SEQ ID NO:18, SEQ
- 25 ID NO:19, SEQ ID NO:22 and combinations thereof.
17. The method of claim 16, wherein the sequence of the oligoribonucleotide is SEQ ID NO:1.
- 30 18. A method of reducing the growth of cells which overexpress the RI_{α} /PKA gene comprising providing to the cells a composition comprising the oligoribonucleotide of claim 1 in an amount effective to reduce the growth of the cells.

19. The method of claim 18, wherein the sequence of the oligoribonucleotide is selected from the group consisting of SEQ ID NO:1, SEQ ID NO:10, SEQ ID NO:13, SEQ ID NO:14, SEQ ID NO:15, SEQ ID NO:16, SEQ ID NO:17, SEQ ID NO:18 , SEQ ID NO:19 and SEQ ID NO:22.

5

20. The method of claim 19, wherein the sequence of the oligoribonucleotide is SEQ ID NO:1.

21. A method of reducing the growth of cancer cells in an individual comprising
10 administering to the individual a growth inhibiting regimen of the composition of claim 9.

22. The method of claim 21, wherein the sequence of the oligoribonucleotide in the composition is selected from the group consisting of SEQ ID NO:1, SEQ ID NO:10, SEQ ID NO:13, SEQ ID NO:14, SEQ ID NO:15, SEQ ID NO:16, SEQ ID NO:17, SEQ ID
15 NO:18 , SEQ ID NO:19, SEQ ID NO:22 and combinations thereof.

23. The method of claim 22, wherein the sequence of the oligoribonucleotide is SEQ ID NO:1.

20 24. The method of claim 21, wherein the administration of the composition is combined with a treatment selected from the group consisting of surgery, radiation, chemotherapy and immunotherapy.

25. The method of claim 21, wherein the composition is administered via a route
25 selected from the group consisting of intratumoral, intravenous, intraperitoneal, intramuscular, intranasal, oral, topical and rectal.

26. A method for detecting the overexpression of the $RI\alpha$ /PKA gene in a test sample comprising the steps of:
30 a) isolating nucleic acids from the test sample and a control sample;
b) contacting the nucleic acids from the test sample and the control sample with the oligoribonucleotide of claim 1 or a complement thereof; and

c) comparing hybridization of the nucleic acids from the test and the control sample to the oligoribonucleotide of claim 1 or the complement thereof, wherein an increase in the hybridization in the test sample is indicative of the overexpression of the RI_{α} /PKA gene in the test sample.

5

27. The method of claim 26, wherein the nucleic acids are mRNA.

28. The method of claim 26, wherein the nucleic acids are reverse transcribed from mRNA.

10

30. The method of claim 26, wherein the oligoribonucleotide is selected from the group consisting of SEQ ID NO:1, SEQ ID NO:10, SEQ ID NO:13, SEQ ID NO:14, SEQ ID NO:15, SEQ ID NO:16, SEQ ID NO:17, SEQ ID NO:18, SEQ ID NO:19 and SEQ ID NO:22.

15

31. The method of claim 30, wherein the oligonucleotide has a sequence of SEQ ID NO:1.

32. An oligoribonucleotide of from 18 to 30 nucleotides comprising:

20

a contiguous sequence of SEQ ID NO:20 or a sequence which has one-base mismatch with SEQ ID NO:20,

wherein the ribose residue of at least one nucleotide is protected at the 2'-O-position by 2, 4-dinitrophenyl (DNP) and wherein the oligoribonucleotide is capable of down-regulating the expression of the RI_{α} subunit of protein kinase A.

25

33. The oligoribonucleotide of claim 32, which has a sequence of SEQ ID NO:20.

34. A composition comprising the oligoribonucleotide of claim 32.